

A STUDY ON SCIENCE INTEREST AND ACADEMIC ACHIEVEMENT AMONG HIGHER SECONDARY BIOLOGY STUDENTS IN RELATION TO THEIR MENTAL HEALTH

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ABSTRACT

An Interest may be defined as, "a tendency to seek out an activity or a subject and to choose it rather than some alternative" (Croanbach, 1949). According to Crow and Crow (1965), "Interest may refer to the motivating force that impels us to attend to a person, a thing or an activity or it may be the affective experience that has been stimulated by the activity itself. In other words, interests can be the cause of an activity and the result of participation in that activity". Interests change with one's experience. "Since Interests involve reactions to specific things, they must all be learned and they may be modified later on by re-education"

Thus interests grow out of experiences that are satisfying and students will be more interested in the school subjects that give them sustained satisfaction. Science Interests influence students' Achievement in Science. Thus Interests are means to an end besides being an end in themselves. Therefore, they have been taken up for study in the present investigation. There are some factors like love, affection and independence which increase the child's ability to remain mentally healthy. The home that permits and encourages a child in this way is contributing toward the child's mental health. The Psycho-motor domain is the manipulative or the motor skill area. It contains perceiving, imitating, manipulating, precision, articulation and naturalization. Thus Academic Achievement includes the Cognitive, Affective and Psycho-motor components. But in schools, only certain aspects of the cognitive component alone are measured to indicate the Academic Achievement of the students. Thus in our schools, Academic Achievement stands only for the gains in certain aspects of the cognitive domain. The study has revealed that majority of the higher secondary students has high level of interest in Science ,achievement in biology and in their mental health. Hence they should be improved in order to face their challenges in their higher studies.

INTRODUCTION

Academic Achievement

The term 'Academic Achievement' stands for the identifiable operations that students are expected to perform on the curricular materials prescribed for a course. This term has a wide connotation. It does not indicate the marks alone secured by students in tests and examinations. It represents the totality of the academic gains acquired within the school and outside it, too. It includes the gains acquired through curricular as well as co-curricular activities involving community-service oriented programs, too.

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According to Bloom (1956), the Instructional Objectives fall into three domains. They are (a) Cognitive, (b) Affective and (c) Psycho-motor. The Cognitive Domain includes all those activities usually thought of as mental functions, such as the acquisition of knowledge, comprehension, application, analysis, synthesis and evolution. The Affective Domain, which is based on the principle of "internalization" contains the following: receiving, responding,

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valuing, organizing and characterizing. The Psycho-motor Domain is the manipulative or the motor skill area. It contains perceiving, imitating, manipulating, precision, articulation and naturalization.

MENTAL HEALTH

Mental health is the state of relatively good adjustment, feelings of well-being and actualization of one's potentialities and capacities. Family relationship is the earliest and the most influential on the mental health of the child. There is nothing fundamentally wrong with babies; it's what parents do to babies that create problems in mental health. It is said that mother is equal to hundred teachers. It has been found that in families where there is a lot of quarrel and lack of understanding between the adult members, children have poor mental health. There are some factors like love, affection and independence which increase the child's ability to remain mentally healthy. The home that permits and encourage a child in this way is contributing toward the child's mental health.

The Operational Definitions Of The Key Terms

(A) Higher Secondary Biology Students- The studying in standard aixi and in standard xii having biology (both Botany and Zoology) as one of their subject.

(B) Science Interest- The science interest of the selected sample of higher secondary biology students studying in the higher secondary schools , as revealed by the responses to the items in the science interest inventory, constructed and validated by Nellaiopan. No. (1992)

(C) Achievement- The marks obtained by the selected sample of the higher secondary biology students in their biology subject in half yearly examinations.

(D) Mental Health- The mental health of the selected sample of higher secondary biology students studying in the higher secondary schools, as revealed by the responses to the

items in the mental health inventory, constructed and validated by Peter Becker(1989).

In addition, the exogenous variables of (i) the selected sample of higher secondary biology students gender, (ii) types of school, (iii) the locale of the students, (iv) their fathers occupation (v) their mothers occupation, (vi) their fathers education (vii) their mothers education (viii) monthly income of their parents and (ix) the type of the family they belong have been considered in relation to their science interest, their achievement in biology and their mental health.

(E) Government Schools- Higher secondary schools run by the Government of Tamil Nadu.

(F) Private Schools- higher secondary schools run by private management which receives grant in aid from the government of Tamil Nadu.

VARIABLES USED IN THE STUDY

The following are the variables used for the present study.

(I.) Science interest(II.) Achievement in biology (III) Mental Health

Gender, Type of School, Fathers Occupation , Mothers Occupation, Fathers Education Monthly income of parents(Rs.), Type of family.

OBJECTIVES OF THE STUDY

The following are the objectives formulated for the present study

1. To study the level of science interest and achievement in biology ,mental health of the Higher secondary biology students.
2. To study the significance of the difference between the sub samples of them in respect of their science interest and achievement in biology, mental health.
3. To study the nature of the relationship existing between their science interest and their achievement in biology.
4. To study the nature of the relationship existing between their science interest and their mental health.

5. To study the nature of the relationship existing between their achievement in biology and their science interest.

METHOD OF THE STUDY

Normative survey method has been used in this present study and the detailed description of the method .

SAMPLE OF THE STUDY

Cluster sampling technique was used in the selection of the sample of as many as 400 higher secondary schools. This sample was taken 25 higher secondary schools out of the 45 higher secondary schools situated in Namakkal district of Tamil Nadu, India.

TOOLS USED IN THE STUDY

Only two tools have been used in the present investigation. They are

(i) Science interest inventory: Constructed and validated by Nellaippan.N.O.(1992).

(ii) Mental Health inventory: Constructed and validated by Peterbecker(1989).

Copies of this two tools have been administered to the sample of as many as 400 high secondary biology students studying in higher secondary schools chosen for the study.

STATISTICAL TECHNIQUES USED

The following statistical techniques were used in the present study.

- i) Descriptive analysis
- ii) Differential analysis
- iii) Correlation analysis

DELIMITATIONS OF THE STUDY

The study is confined only to the higher secondary students (students of standard xi and standard xii) studying biology (Botany and Zoology) as one of their subject. Also this study is confined only to the schools standard in Namakkal district of Tamil Nadu, India.

Achievement In Biology

One of the objectives of the present investigation, it may be recalled is to study the higher

secondary biology students achievement in biology and also to study if there is any significant difference between the selected pairs of sub-samples in respect of the achievement in biology. In order to realize the aforesaid objectives the marks obtained in the biology subject (Both Botany and Zoology) was considered as their achievement marks in biology. The marks were converted out of 100. The achievement marks ranges from 0 to 100. The maximum mark that one can get in this is 100. The higher the score indicates the the high level of achievement in biology.

Ranges from 20 to 80. The maximum score that one can get in this is 80. Higher score indicates the presence of high level of mental health.

STATISTICAL TECHNIQUES EMPLOYED

The Means, the Standard Deviations and the Medians for the three scores for the Entire Sample and its 27 sub-samples were computed. The Skewness and Kurtosis of the three scores for the Entire Sample alone were computed.

The Test of Significance (t-Test) was used in order to find out the significance of the difference between the means of the (a) Science Interests scores, (b) Achievement scores and (c) Mental health scores .

Pearson's Product-Moment 'r' was computed between (a) Science Interests Scores and Achievement scores, (b) Science Interests Scores and Mental health scores and (c) Achievement scores and Mental health scores.

The Significance Of The Difference Between The Means Of The Science Interest Scores Of Pairs Of Subsamples

It may be recalled that one of the objectives of the present study is to study, if there is any significant difference in science interest in respect of the selected pairs of sub-samples of higher secondary biology students divided on the basis of (a) the selected sample of higher secondary

A study on science interest and academic achievement among higher secondary biology students in relation to their mental health biology students gender, (b) types of school, (c) the locale of the students, (d) their fathers occupation (e) their mothers occupation, (f) their fathers education (g) their mothers education (h) monthly income of their parents and (i) the type of the family they belong .

For this purpose, it has been decided to use the test of significance after having framed the suitable null hypotheses to be tested at the 0.05 level of significance.

The Levels Of Science Interest Of Entire Sample And Its 27 Sub Sample

LEVELS	ENTIRE SAMPL E	MALE STUDEN TS	FEMALE STUDEN TS	STUDENTS STUDYING IN		STUDENTS RESIDING IN	
				GOVERNME NT SCHOOLS	PRIVAT E SCHOOLS	RURAL AREA	URBA N AREA
Low	12 (3.00%)	6 (3.00%)	6 (3.00%)	7 (3.50%)	5 (2.50%)	10 (5.00%)	2 (1.00%)
High	388 (97.00%)	194 (97.00%)	194 (97.00%)	193 (96.50%)	195 (97.50%)	190 (95.00%)	198 (99.00%)

The Levels Of Achievement In Biology Of Entire Sample And Its 27 Sub Sample

LEVELS	ENTIRE SAMPLE	MALE STUDENT	FEMALE STUDENT	STUDENTS STUDYING IN		STUDENTS RESIDING IN	
				GOVERNMENT SCHOOLS	PRIVATE SCHOOLS	RURAL AREA	URBAN AREA
Low	80 (20.00%)	40 (20.00%)	40 (20.00%)	39 (19.50%)	41 (20.50%)	39 (19.50%)	41 (20.50%)
High	320 (80.00%)	160 (80.00%)	160 (80.00%)	161 (80.50%)	159 (79.50%)	161 (80.50%)	159 (79.50%)

The levels of mental health of entire sample and its 27 sub Sample

LEVELS	ENTIRE SAMPL E	MALE STUDEN TS	FEMAL E STUDEN TS	STUDENTS STUDYING IN		STUDENTS RESIDING IN	
				GOVERNME NT SCHOOLS	PRIVAT E SCHOOLS	RURAL AREA	URBAN AREA
Low	30 (7.50%)	21 (10.50%)	9 (4.50%)	24 (12.00%)	6 (3.00%)	10 (5.00%)	20 (10.00%)
High	370 (92.50%)	179 (89.50%)	191 (95.50%)	176 (88.00%)	194 (97.00%)	190 (95.00%)	190 (90.00%)

AMONG THE ZERO ORDER CORRELATION VARIABLES

PAIRS	DF	CALCULATED VALUE OF r^2	TABLE VALUE OF r^2 AT 0.05 LEVEL.	REMARKS
Science interest scores and achievement in biology scores (r_2)	338	-0.097	0.10	- N S

Science interest scores and mental health scores (r_{13})	338	0.358	0.10	1 S
achievement in biology scores and health scores (r_{12})	338	0.016	0.10	1 NS

It may be recalled that the objectives of the present investigation include the finding out of the nature of the relationship existing between the (i) Science Interest (1) and achievement in biology (2), (ii) Science interest (1) and mental health (3) and (iii) Achievement in biology (2) and mental health (3).

In order to realize the above objective, persons' product moment 'r' was computed between the (i) Science Interest and achievement in biology (r_{12}), (ii) Science interest and mental health (r_{13}) and (iii) Achievement in biology and mental health (r_{12}).

The zero order calculations were computed in respect of the total sample only ($N=400$; $df= 398$).

The 'r' values are found to be positive and not significant at the 0.05 level for the r_{13} and r_{23} . Also, the 'r' value is found to be negative and not significant at the 0.05 level for r_{12} Important Findings:

The following are the important findings of the present investigation.

- 1) In respect of the entire sample of higher secondary students, only 3.00% of them have low level of science interest as much as 97.00% of them have high level of science interest. This trend is seen in respect of the sub-samples, too. This finding reveals that majority of the higher secondary students belongs to the low level of science interest.
- 2) In respect of the entire sample of higher secondary biology students, only 20.00% of them have low level of achievement in biology as much as 80.00% of them have high level of achievement in biology. This trend is seen in respect of the sub-samples, too . This finding reveals that majority of the higher secondary biology students belongs to the low level of achievement in biology.
- 3) In respect of the entire sample of higher secondary students, only 7.50% of them have low level of mental health as much as 92.50% of them have high level of mental health. This trend is seen in respect of the sub-samples, too. This finding reveals that majority of the higher secondary biology students belongs to the low level of mental health.
- 4) There is a significance difference in science interest between the male and female higher secondary biology students . More over the female higher secondary biology students are found to be better than their male counterparts in their science interest.
- 5) There is a significance difference in science interest between the higher secondary biology students studying in Government schools and private schools. More over the higher secondary biology students studying in private schools are found to be better than the higher secondary biology students studying in Government schools in their science interest.
- 6) There is no significance difference in science interest between the higher secondary biology students residing in urban area and rural area. More over the higher secondary biology students residing in urban area are found to be better than the higher secondary biology students residing in rural area in their science interest.
- 7) The higher secondary biology students fathers occupation caused no significant difference in their science interest.

- 8) The higher secondary biology students mother occupation caused no significant difference in their science interest.
- 9) The higher secondary biology students fathers educational status caused no significant difference in their science interest.
- 10) The higher secondary biology students whose mother is a illiterate and having education upto school level do differ in their science interest. Also, for the students whose mother is a illiterate and having education above school level and for the students whose mother is having education up to school level and having education above school level do not differ in their science interest

CONCLUSION

The present investigation is a very unique study conducted in Namakkal District to study the higher secondary students interest in Science, and their achievement in biology. The study has revealed that majority of the higher secondary students has high level of interest in Science ,Achievement in biology and in their mental health. Hence they should be improved in order to face their challenges in their higher studies.

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